A rapid and specific LC-MS/MS method was developed and validated for quantifying formoterol with a lower limit of quantitation of 0.4 pg/mL from a 0.5 mL of human plasma sample.

**Introduction**

In a recent study for obstructive airway disease, including asthma and COPD, formoterol exhibited a rapid onset of action comparable to the short-acting bronchodilator, VENTOLIN®. Furthermore, the TOMTEC liquid handling system made sample preparation quick and consistent.

**Results and Discussion**

- **Calibration Range**
  - 0.4 to 100 pg/mL

- **Accuracy & Precision**
  - QC Conc. (pg/mL): 0.4, 2.0, 20.0
  - Assay Accuracy (%): 94%, 95%, 96%
  - Assay Precision (%): 2.00, 0.98, 3.80

- **Method Recovery**
  - Compared to Nominal Value (%)
  - Low: 4.8, Medium: 8.7, High: 8.7

- **Compliance**
  - Condition: Room Temperature
  - Assay Accuracy: 94%, 95%, 96%

- **Analyte Area / IS Area**
  - Formoterol: 4.8e4, Formoterol-D6: 0.4e6

- **Chromatograms**
  - Figure 1: Ion chromatograms of blank plasma (A), and 0.4 pg/mL formoterol extracted from plasma (B)
  - Figure 2: Ion chromatograms of 100 pg/mL formoterol extracted from plasma (A), and the internal standard extracted from plasma (B)
  - Figure 3: LC/MS-MS product ion spectra of Formoterol (A) and Formoterol-D6 (B)
  - Figure 4: Representative calibration curve for the determination of formoterol in the range from 0.4 pg/mL to 100 pg/mL in human plasma

- **Conclusion**
  - A rapid and specific LC-MS/MS method was developed and validated for quantifying formoterol with a lower limit of quantitation of 0.4 pg/mL from a 0.5 mL of human plasma sample.